

SPLIT METER CONCEPT

The Jade meter comprises two parts:

- the prepayment meter, and
- the customer interface unit.

The prepayment meter contains all critical functions such as metering, token decryption and load control functionality. It has a two-wire communications interface to the remotely located customer interface unit, operates independently and is immune to any form of tampering on the interface unit.

The meter is usually installed outside the consumer's premises to facilitate easy inspection by utility staff and to reduce the possibility of fraud by tampering. The meter is provided with its own local display for viewing important meter parameters.

The customer interface is effectively a remote extension of the meter. It comprises a 12-key keypad for the entry of prepayment voucher numbers and accessing of various management functions, as well as a display for accessing parameters such as remaining credit and various meter status functions. The customer interface can be mounted in any convenient location inside the consumer's residence.

PRINCIPLE OF OPERATION

The Cashpower Jade meter may be used for new or existing electricity installations. It is a direct replacement for existing socket meters and only requires the additional connection of a pair of communications wires for the customer interface unit. This communications interface is a low-voltage, non-polarised and galvanically isolated circuit that can be routed to any convenient location in the consumer's residence without the necessity for any particular precautions. A minimum range of 130 meters between the customer interface unit and meter is achievable.

USER-FRIENDLY CUSTOMER INTERFACE

User interaction with the meter and access to meter information (such as a low credit warning, energy consumption, and load contactor status) is available using the customer interface keypad and display. The customer interface unit makes use of clear, language-independent icons. In addition, various audible tones are sounded under different conditions (e.g. Low Credit Alarm).

METER STATUS AND DIAGNOSTICS INDICATORS

The meter is typically programmed to permanently display the 'total kWh consumed', to cater for any manual meter-reading requirements by the utility. The dedicated display icons provide a clear indication of meter status e.g. "out of credit". This allows a technician to view the state of the meter without the need for specialised interrogation tools or having to gain access to the consumer's premises.

A 'rate of consumption' LED provides a quick visual indication of the magnitude of the consumer's load as well as a reference for verifying meter accuracy.

A dedicated diagnostics LED on the meter gives a visual indication of any communications fault between the meter and the customer interface unit.

OPTICAL INTERFACE

The Jade meter is provided with an IEC 62056-21 compliant optical communications port. This allows the utility to access a variety of information stored inside the meter.

TAMPER DETECTION

The split configuration of the Jade meter significantly reduces the risk of tampering. The meter may be installed in a secure, remote location and is mechanically sealed against tampering as part of the installation. It is not possible to tamper with the meter via customer interface unit.

The Jade meter also has a feature allowing detection of Significant Reverse Energy. If the line and load wires are swapped during installation, the meter will continue to operate and decrement credit but can be factory programmed to tamper and disconnect the load should significant reverse energy be detected.

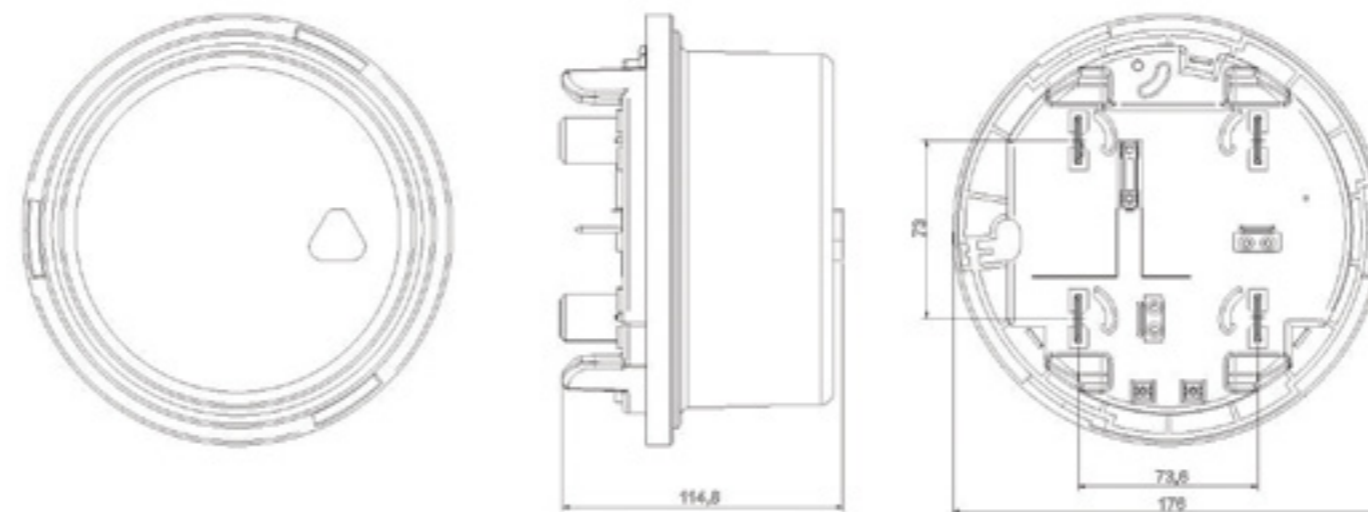
SURGE PROTECTION

The meter has been designed to have a surge voltage withstand that significantly exceeds the requirements of ANSI C12-1.

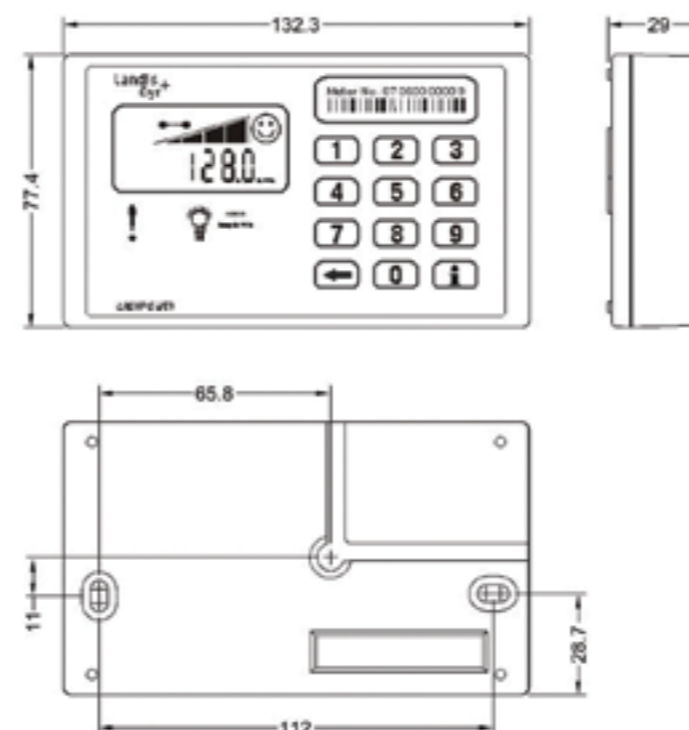
COMMUNICATION LINE PROTECTION

The communications interface can withstand voltage surges of 6kV, however, it is recommended that one of the communication lines be earthed at the meter for additional protection.

PRODUCT SPECIFICATIONS - Dimensions



Meter dimensions



Customer Interface Unit dimensions

Manufactured by:

Landis
Gyr+
manage energy better

Cashpower Jade

Keypad-based split prepayment electricity meter for residential applications.



Customer Interface Unit

- Low profile design
- Easy to install and ideal for new reticulation as well as retrofitting of existing socket type meters
- Available in Forms 1S, 2S, 12S and 25S
- Remote Customer Interface Unit
- Proven Cashpower keypad technology
- Galvanically isolated communication link to the customer interface unit for consumer safety
- Language independent user interface
- Prepayment / Credit Mode
- Optical interrogation port
- High surge withstand capability for areas prone to lightning or other line surges
- Meets ANSI C12-1 standards for performance
- STS Compliant

PRODUCT SPECIFICATIONS Cashpower Jade

General Information

Forms	15 (single-phase, 2-wire), 25 (single-phase, 3-wire) 12S, 25S (3-wire network)
Compatible networks	Single-phase, 2-wire, 120V or 240V Single-phase, 3-wire, 240V 3-wire, Network, 120V

Operation

General	Prepayment and Credit modes
Credit entry mechanism	Remote CIU keypad; encrypted numeric tokens
Token Encryption Method	20-Digit STS (2)
Applicable specifications	ANSI C12-1, ANSI C12-10

Electrical Ratings

Nominal Voltage (Un) – Rated Voltage	120 or 240V AC rms (other voltages available on request)
Nominal frequency	60 Hz (50 Hz option available)
Operating voltage range	80% to 120% of Un
Maximum continuous current (Imax) Burden	100A (200A option available) – programmable to lower power limits
Voltage circuit	<1.8W / <10VA @ 240V
Current circuit	<1 VA @ Base Reference Current (TA)

Protective class (according to IEC 62052-11)	Class II (double insulated)
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Metrological Performance

Measurement Direction	Forward and reverse power detection and metering (2) (credit is decremented in both directions)
Meter constant (LED flash rate)	1000 impulses / kWh
Basic reference current (TA)	15A (3)
Accurate metering range	0.05 TA to 1.2 Imax (4)
Starting current	≤ 0.004 TA (TA = Test Amps)
Power threshold	8.4W (approx 35mA @ 240V and cos() = 1) (5)
Accuracy class index	According to ANSI c12-1 (ANSI C12-20 for Class 0.5 available on request)

Disconnection device

Type	Two, single-pole, latching contractors rated at 100A
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Insulation; Over-Voltage and Surge Protection

Insulation system classification	Protective Class II (according to IEC 62052-11)
Insulation level	4kV ms for 1 minute
Over-voltage withstand	440VAC for 48 hours 600VDC for 1 minute
Surge Immunity – Voltage impulse withstand	8kV, 1.2/50µs, with 2Ω source impedance
Electromagnetic compatibility (EMC)	
Electrostatic discharge	15kV air discharge
Immunity to HF fields	80 MHz to 2 GHz @ 10V/m with load, 80MHz to 2GHz @ 30V/m no load
Immunity to fast transient bursts	4kV
Radio Interference	Complies with requirement for CISPR 22
Specification compliance	IEC 61000-4-2; IEC 61000-4-3; IEC 61000-4-4; IEC 61000-4-6; CISPR 22

Community Circuitry

Type	Galvanically isolated, non-polarised, 2-wire, half-duplex. Meter function is independent of CIU function
Rated Impulse Voltage	Peak Voltage 6kV (1.2/50µS) waveform (according to IEC 62052-11 Protective Class II)
Insulation Properties	4kVrms (1 minute) (according to IEC 62052-11 Protective Class II)
Communication Distance	up to 130 meters, with a maximum total loop resistance of 40Ω

Main Enclosure

Type	Socket meter in accordance with ANSI C12-10
Operating Environment	
Area of Application	Outdoor meter (according to ANSI C12-1)
Operating temperature range	-25°C (-13°F) to +55°C (+131°F)
Storage temperature range	-25°C (-13°F) to +70°C (+158°F)
Relative humidity	Maximum ≤95%; Annual mean 75%

Man-Machine Interface

Rate of Consumption Indicator	Visible LED, 1000 pulses/kWh (infra red option available on request)
CIU Operating Indication	Visible LED

External Interfaces

Optical Communications Port	Visible LED, 1000 pulses/kWh (infra red option available on request)
CIU Operating Indication	According to IEC 62056-21

(1) STS = Standard Transfer Specification (Industry Standard)

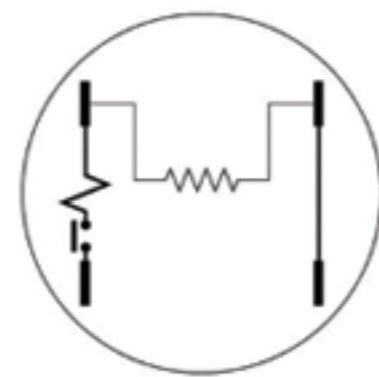
(2) Will accurately meter energy if Line and Load connections are reversed. Can also be configured to tamper on reverse energy detection.

(3) Other Base Currents available on request

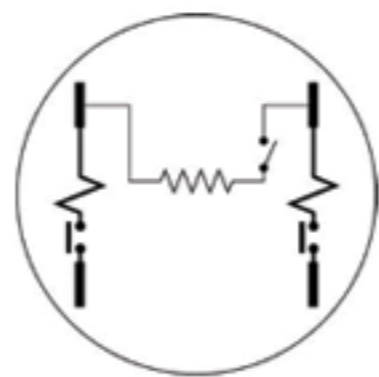
(4) The metering is accurate within the limits specified by ANSI C12-1. Should a meter momentarily be operated outside its specified maximum current rating it will meter accurately up to 1.2 Imax.

(5) The Power Threshold represents the minimum load power that the meter will register. This value is programmable, with the recommended level for a TA 15 meter shown.

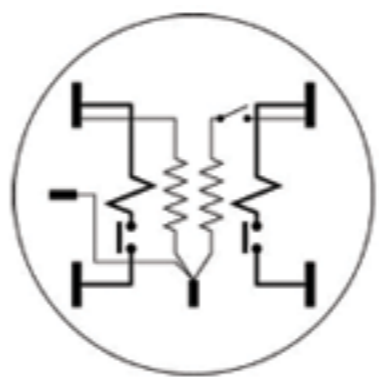
INTERNAL CONNECTION DIAGRAMS



Form 1S
Single-Phase, 2-Wire
120V/240V



Form 2S
Single-Phase, 3-Wire
240V



Form 12S/25S
3-Wire Network 120V

PRODUCT SPECIFICATIONS Customer Interface Unit

Electrical

Type	Isolated, non-polarised, 2-wire, half-duplex, 12Vdc from meter
Operating Range (Communication)	Up to 130 meters, with a maximum total loop resistance of 40Ω

Operating Environment

Operating Temperature range	-10°C (+14°F) to +55°C (+131°F)
Storage Temperature Range	-25°C (+12°F) to +70°C (+158°F)
Relative Humidity (IEC 6 1036)	Maximum ≤95%; Annual mean 75%

Enclosure

Type	Slimline, wall mounted
Rating	IP 51
Material	ABS
Dimensions	77.4mm (H) x 132.3mm(W) x 29mm (D)
Weight	100 g

Terminals

Type	Two-way screw terminal
Maximum cable size	2.5mm ²

Sealing

Enclosure	factory sealed, no user serviceable parts
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Insulation; Over-Voltage and Surge Protection

Type	Language-independent
Components	Pictographic/Numeric LCD display, keypad, LED rate of consumption indicator, audio feedback

Liquid Crystal Display (LCD)

Size	9cm ² (45mm (W) x 20mm (H)), 8 digits +11 icons
Icon information	Happy face, Sad face, Alert, Breaker status, Info, kWh, 4-segment credit wedge

Numeric information	Display of various meter information such as credit levels, number entry, etc.
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Keypad	12-key, international standard lay-out including "Information" and "Backspace" keys
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Buzzer	Audio feedback on key press, encrypted number Accept and Reject melodies, Low-credit alarms as a factory-programmable option
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Light Emitting Diode	Rate of consumption indicator (pulse rate proportional to current rate of consumption)
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Diagnostic Information	Additional meter parameters accessible via the "Information" key
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